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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,858	07/25/2003	Walter G. Dixon	062891.0945	2644

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EXAMINER	
LOHN, JOSHUA A	

ART UNIT	PAPER NUMBER
2114	

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/627,858	DIXON ET AL.	
	Examiner	Art Unit	
	Joshua A. Lohn	2114	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

FINAL REJECTION

Response to Arguments

Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made..

Claims 1-3, 9, 11-14, 16-19, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merchant et al., United States Patent Application Publication number 2004/0230862, filed May 16, 2003.

As per claim 1, Merchant discloses a method for providing redundant data load sharing in a distributed network, comprising: receiving an original data entry (Merchant, ¶0113, where the data stores are the data entries being stored); storing the original data entry in a first one of a plurality of nodes (Merchant, ¶0118, where the entries are replicated across multiple nodes); generating a replicated data entry from the original data entry; storing the replicated data entry in a second one of the plurality of nodes (Merchant, ¶118-119, where a plurality of replicas are

generated for the plurality of nodes); identifying a failure of either of the first one or the second one of the plurality of nodes (Merchant, ¶0132, where faulty nodes can be identified); generating a re-replicated data entry for storage at a third one of the plurality of nodes in response to the failure in the first or second one of the plurality of nodes (Merchant ¶0132-¶0137, where the removal of a faulty node will result in the replication of all data entries that were stored thereon to another node in the system to maintain the correct number of replicas). Merchant fails to explicitly disclose the re-replicated data entry being generated from a non-failed node.

It would have been obvious to one skilled in the art at the time of the invention that the invention that Merchant would have generated re-replicated data from the non-failed first or second one of the plurality of nodes to provide to the third of the plurality of nodes.

This would have been obvious because Merchant discloses re-replicating the data to nodes in the event of node failure (Merchant ¶132-¶137). It would have been obvious that the source of this replication would have been from a non-faulty node in the group because the node being removed from service may have a fault (Merchant, ¶132), and as such, the data contained within that node may be erroneous. Thus modifying the invention of Merchant to only replicate data from non-faulty nodes would provide the obvious benefit of avoiding the replication of erroneous data from a faulted node.

As per claim 2, Merchant further discloses the method of claim 1, further comprising: determining whether there is sufficient capacity in the distributed network to handle data entry

replication in response to the failure of the first or second one of the plurality of nodes (Merchant, ¶0133-¶0134, where capacity requirements are checked).

As per claim 3, Merchant further discloses the method of claim 2, further comprising: preventing replication of the original or replicated data entry at the third one of the plurality of nodes in response to insufficient capacity in the distributed network (Merchant, ¶0134, where replication is held off when no satisfactory node is detected).

As per claim 9, Merchant further discloses the method of claim 1, further comprising: establishing a capacity for the distributed network, the capacity representing an amount of data to be stored in the distributed network (Merchant, ¶0116-¶0118, where the nodes that meet the requirements for the redundancy network); establishing a minimum number of the plurality of nodes required to provide redundancy in the distributed network (Merchant, ¶0118, where M represents the minimum number of nodes required for redundancy).

As per claim 11, Merchant discloses a system for providing redundant data load sharing in a distributed network, comprising: a plurality of nodes (Merchant, ¶0116), a first one of the plurality of nodes operable to receive and store an original data entry (Merchant, ¶0118), providing a replicate data entry to a second one of the plurality of nodes (Merchant, ¶0123-¶0131, where the loading of each node involves the providing of data between nodes); determine a failure of the second one of the plurality of nodes (Merchant, ¶0132-¶0137, where a faulty node is detected by all nodes in the determination of capacity for handling the failure); providing a re-replicated data entry to a third one of the plurality of nodes in response to failure of the

second one of the plurality of nodes (Merchant, ¶0134-0137, where the information is replicated to an additional node). All these actions can be performed by the first node on the system, since each storage node can operate the methods as part of a distributed application (Merchant, ¶0112), however Merchant doesn't explicitly provide for the re-replicated data being provided form the non-faulty node.

It would have been obvious to one skilled in the art at the time of the invention that the invention that Merchant would have generated re-replicated data from the non-failed first one of the plurality of nodes to provide to the third of the plurality of nodes.

This would have been obvious because Merchant discloses re-replicating the data to nodes in the event of node failure (Merchant ¶132-¶137). It would have been obvious that the source of this replication would have been from a non-faulty node in the group because the node being removed from service may have a fault (Merchant, ¶132), and as such, the data contained within that node may be erroneous. Thus modifying the invention of Merchant to only replicate data from non-faulty nodes would provide the obvious benefit of avoiding the replication of erroneous data from a faulted node.

As per claim 12, Merchant further discloses the system of claim 11, wherein each node includes a distributed control function operable to control storage and replication of the original data entry (Merchant, ¶0112).

As per claim 13, Merchant further discloses the system of claim 11, wherein the first one of the plurality of nodes is operable to determine whether there is sufficient capacity in the

distributed network to handle data entry replication in response to the failure of the second one of the plurality of nodes (Merchant, ¶0133-¶0134, where the capacity is checked).

As per claim 14, Merchant and Ohran further disclose the system of claim 13, wherein the first one of the plurality of nodes is operable to prevent replication of the original data entry at the third one of the plurality of nodes in response to insufficient capacity in the distributed network (Merchant, ¶0134, where replication is prevented when no node of sufficient capacity exists).

As per claim 16, Merchant further discloses the system of claim 11, wherein the capacity of each of the plurality of nodes is adjusted in response to an addition of a new node or failure of an existing node (Merchant, ¶0124-¶0131).

As per claims 17-19, these claims are merely a system for executing the methods of claims 1-3 rejected above. Merchant discloses a system, see figure 1, and as such the rejections of claims 1-3 are applicable to claims 17-19 as well.

As per claims 22-24, these claims are merely a computer program for executing the methods of claims 1-3 rejected above. Merchant discloses the use of a computer program, see ¶0112, and as such the rejections of claims 1-3 are applicable to claims 22-24 as well.

Claims 4-8, 10, 15, 20, 21, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merchant in view of Ohran et al., United States Patent number 5,812,748, published September 22, 1998.

As per claim 4, Merchant discloses the method of claim 3, including the use of a distributed network, but fails to disclose the additional limitation of adjusting the capacity of the distributed network in response to the failure, in order to store new data entries without replication.

Ohran discloses adjusting the capacity of a network in response to the failure of a first or second node in order to store new data entries without replication (Ohran, col. 7, lines 44-55).

It would have been obvious to one skilled in the art at the time of the invention to include the capacity adjustment of Ohran in the invention of Merchant.

This would have been obvious because Merchant discloses a means for dealing with capacity shortage by reducing the size of the data to be replicated (Merchant, ¶0134). While this method is effective in allowing the required degree of replication when small amounts of space are available on each storage node, it fails to include support for a condition in which no space is available for the replication. Ohran provides a system that allows for adjusting the replication capacity attributes to provide a system in which data storage continues even if the minimum numbers of replica storage nodes are not available (Ohran, col. 7, lines 37-65, where replication is suspended when the storage for replication does not exist). The system of Ohran provides the system of Merchant with the obvious benefit of allowing continued, successful operation even when a less than the minimum numbers of replica storage nodes exist.

As per claim 5, Merchant discloses the method of claim 3 involving the replication of data entries in a distributed network (Merchant, ¶0118). Merchant fails to disclose identifying a recovery of the failed first or second one of the plurality of nodes and performing storage and replication of subsequent data in response to this recovery.

Ohran discloses the recovery of the failed first or second one of a plurality of storage nodes and performing storage and replication of subsequently received data entries in response to this recovery (Ohran, col. 7, line 62, through col. 8, line 22, where the connection of the failing storage system to the non-failing server represents the recovery of the failed first or second storage node that is then allowed to begin mirroring again, which allows the replication of subsequently received data entries).

It would have been obvious to one skilled in the art at the time of the invention to include the capacity adjustment and subsequent recovery of Ohran in the invention of Merchant.

This would have been obvious because Merchant discloses a means for dealing with capacity shortage by reducing the size of the data to be replicated (Merchant, ¶0134). While this method is effective in allowing the required degree of replication when small amounts of space are available on each storage node, it fails to include support for a condition in which no space is available for the replication. Ohran provides a system that allows for adjusting the replication capacity attributes to provide a system in which data storage continues even if the minimum number of replica storage nodes are not available (Ohran, col. 7, lines 37-65, where replication is suspended when the storage for replication does not exist) and restoring replication following any recovery (Ohran, col. 7, line 62 through col. 8, line 22). The system of Ohran provides the

system of Merchant with the obvious benefit of allowing continued, successful operation even when a less than the minimum number of replica storage nodes exist and allows for restoration to the desired replication following a recovery.

As per claim 6, Merchant and Ohran disclose the method of claim 5, further comprising: adjusting the capacity of the distributed network in response to the recovery of the failed first or second one of the plurality of nodes (Ohran, col. 7, line 8, lines 7-22, where the failed first or second node is shown in recovery, and Merchant, ¶0124-¶0125, where the addition of any storage device causes capacity adjustments).

As per claim 7, Merchant and Ohran disclose the method of claim 6, further comprising: performing replication of those data entries previously stored but not replicated as a result of the failure of the first or second one of the plurality of nodes (Ohran, col. 8, lines 13-17).

As per claim 8, Merchant discloses the method of claim 1 involving the replication of data entries in a distributed network (Merchant, ¶0118). Merchant fails to disclose identifying a recovery of the failed first or second one of the plurality of nodes and including the recovered failed first or second one of the nodes in the storage and replication of subsequent data in response to this recovery.

Ohran discloses the recovery of the failed first or second one of a plurality of storage nodes and including this node in the storage and replication of subsequently received data entries in response to this recovery (Ohran, col. 7, line 62, through col. 8, line 22, where the connection of the failing storage system to the non-failing server represents the recovery of the failed first or

second storage node that is then allowed to begin mirroring again, which allows the replication of subsequently received data entries).

It would have been obvious to one skilled in the art at the time of the invention to include the capacity adjustment and subsequent recovery of Ohran in the invention of Merchant.

This would have been obvious because Merchant discloses a means for dealing with capacity shortage by reducing the size of the data to be replicated (Merchant, ¶0134). While this method is effective in allowing the required degree of replication when small amounts of space are available on each storage node, it fails to include support for a condition in which no space is available for the replication. Ohran provides a system that allows for adjusting the replication capacity attributes to provide a system in which data storage continues even if the minimum number of replica storage nodes are not available (Ohran, col. 7, lines 37-65, where replication is suspended when the storage for replication does not exist) and restoring replication following any recovery (Ohran, col. 7, line 62 through col. 8, line 22). The system of Ohran provides the system of Merchant with the obvious benefit of allowing continued, successful operation even when a less than the minimum number of replica storage nodes exist and allows for restoration to the desired replication following a recovery.

As per claim 10, Merchant discloses the method of claim 9, including the establishment of a minimum number of nodes, but fails to disclose the additional limitation of maintaining at least one occurrence of all data entries should the number of nodes fall to one less then this minimum number.

Ohran discloses storing at least one occurrence of all data entries when the number of storage nodes is one less than the minimum for replication (Ohran, col. 7, lines 44-55).

It would have been obvious to one skilled in the art at the time of the invention to include the storage of at least one occurrence of Ohran in the invention of Merchant.

This would have been obvious because Merchant discloses a means for dealing with capacity shortage by reducing the size of the data to be replicated (Merchant, ¶0134). While this method is effective in allowing the required degree of replication when small amounts of space are available on each storage node, it fails to include support for a condition in which no space is available for the replication. Ohran provides a system that allows for adjusting the replication capacity attributes to provide a system in which data storage continues even if the minimum numbers of replica storage nodes are not available (Ohran, col. 7, lines 37-65, where replication is suspended when the storage for replication does not exist). The system of Ohran provides the system of Merchant with the obvious benefit of allowing continued, successful operation even when a less than the minimum numbers of replica storage nodes exist.

As per claim 15, Merchant discloses the method of claim 14, including the use of a distributed network, but fails to disclose the additional limitation of adjusting the capacity of the distributed network in response to the failure, in order to store new data entries without replication.

Ohran discloses adjusting the capacity of a network in response to the failure of a node in order to store new data entries without replication (Ohran, col. 7, lines 44-55).

It would have been obvious to one skilled in the art at the time of the invention to include the capacity adjustment of Ohran in the invention of Merchant.

This would have been obvious because Merchant discloses a means for dealing with capacity shortage by reducing the size of the data to be replicated (Merchant, ¶0134). While this method is effective in allowing the required degree of replication when small amounts of space are available on each storage node, it fails to include support for a condition in which no space is available for the replication. Ohran provides a system that allows for adjusting the replication capacity attributes to provide a system in which data storage continues even if the minimum numbers of replica storage nodes are not available (Ohran, col. 7, lines 37-65, where replication is suspended when the storage for replication does not exist). The system of Ohran provides the system of Merchant with the obvious benefit of allowing continued, successful operation even when a less than the minimum numbers of replica storage nodes exist.

As per claims 20 and 21, these claims are merely a system for executing the methods of claims 4 and 5 rejected above. Merchant and Ohran disclose a system, see figure 1 of Merchant, and as such the rejections of claims 4 and 5 are applicable to claims 20 and 21 as well.

As per claims 25 and 26, these claims are merely a computer program for executing the methods of claims 4 and 5 rejected above. Merchant and Ohran disclose the use of a computer program, see ¶0112 of Merchant, and as such the rejections of claims 4 and 5 are applicable to claims 25 and 26 as well.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua A. Lohn whose telephone number is (571) 272-3661. The examiner can normally be reached on M-F 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571) 272-3644. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JAL

SCOTT BADERMAN
SUPERVISORY PATENT EXAMINER